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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,329	12/23/2005	Hisashi Kawamoto	1007-0003WOUS	6282

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EXAMINER

NGUYEN, TRAN N

ART UNIT PAPER NUMBER

2834

DATE MAILED: 07/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/562,329

Applicant(s)

KAWAMOTO ET AL.

Examiner

Tran N. Nguyen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-2** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Laesser et al (US 4,371,821)** in view of **Nakajima et al (JP 54-134313)**.

Laesser discloses a step motor comprising:

a rotor (4) having as a cylinder shape magnet;

a first magnetic pole (1a) magnetically excited by a first coil (5);

a second magnetic pole (1b) magnetically excited by a second coil (6);

and a third magnetic pole (1c) magnetically excited by the first coil and the second coil;

wherein a gap (1d) (figs 1-3) between the third magnetic pole and the rotor is smaller than that between the first magnetic pole and the rotor and that between the second magnetic pole and the rotor, wherein

the first magnetic pole and the second magnetic pole are provided on both ends of the stator; and the third magnetic pole is provided in the center of the stator.

Leasser substantially discloses the claimed invention, except for the limitations of the following:

(a) the rotor having four magnetic poles;

(b) the stator having a plan view of substantially lateral U-shape is arranged to face a circumferential surface of the rotor.

Regarding the rotor having four poles, for the purpose of reaching the next statically stabilized point to cease its motion and giving the rotor an enhanced rotary torque in clockwise direction, Nakajima teaches a step motor comprising a magnet rotor having four magnetic poles arranged alternately in polarities (figs 2-13).

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the step motor by configuring the rotor with alternately arranged four magnetic poles, as taught by Nakajima. Doing so would improve the motor's efficiency by enhancing the rotor performance. Furthermore, stepping motor having rotor magnet with alternately arranged four magnetic poles are well known in the art.

Regarding the stator having a plan view of substantially lateral U-shape is arranged to face a circumferential surface of the rotor, Laesser's stator core essential elements are three poles, wherein a first and second magnetic poles respectively magnetically excited by the first and second coils, while a third magnetic pole is magnetically excited by both coils, particularly a gap that defined by portion (1d) of the third magnetic pole and the rotor is smaller than that between the first and second poles and the rotor. Laesser discloses that the smaller gap defined by portion (1d) of the third pole results, in conjunction with the magnet of the rotor (4), in the formation of a positioning torque. This torque provides the rotor with two stable balanced positions. Thus, by applying the Laesser's essential disclosure, those skilled in the art would

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understand that it would have been obvious to an artisan to modify the general shape of the stator' core as long as that designed shape having the essential features as disclosed by Laesser.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the step motor by configuring the having a plan view of substantially lateral U-shape is arranged to face a circumferential surface of the rotor. Doing so would provide a lighter stator core with less material and less cost. Also, a change in size or shape is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955) (emphasis added).

3. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laesser et al (US 4,371,821) in view of Sato (US 4,600,864).

Laesser substantially discloses a step motor, except for the limitations of the following:

(a) the rotor having four magnetic poles;

(b) the stator having a plan view of substantially lateral U-shape is arranged to face a circumferential surface of the rotor.

Regarding the rotor having four poles, Sato teaches that when the rotor has two poles, it is difficult to re-start the motor when the rotor is stopped at a rotational position where the centers of the magnetic flux through the rotor bore and rotor poles substantially aligned with each other. It is possible to obviate the problems by using, in combination, a stator having three poles and a rotor having four poles or two poles (col 1, lines 48-60). This would solve difficulty of re-starting the motor when the rotor is stopped at a rotational position where the centers of the magnetic flux through the rotor bore and rotor poles substantially aligned with each other. Sato also mentions that by designing a stepping motor with 3-pole stator and 4-pole rotor would require a large number of Hall generators, which in turn raises the cost of production.

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Nevertheless, configuring a stepping motor having 3-pole stator with a modified 4-pole rotor would solve the starting problem.

Thus, Those skilled in the art would understand that, based on the Sato's essential teaching, it would have been obvious to an artisan to modify the Leasser motor by configuring the rotor as a 4-pole rotor in order to enhance the performance of the rotor, particularly re-starting its rotation, with less energy consumed at the time of starting the rotor's rotation, even though the more Hall devices are required with more production cost. This is a matter of obvious engineering design choices: (1) a stepping motor with 2-pole rotor requires less Hall devices and less complicated control circuit but consumes large amount of energy for starting, while (2) a stepping motor with 4-pole rotor consumes less amount of energy for starting and enhanced re-starting thereof, while requires more Hall devices and complicated control circuit.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the step motor by configuring the rotor with alternately arranged four magnetic poles, as taught by Sato. Doing so would improve the motor's efficiency by enhancing the rotor re-starting performance.

Regarding the stator having a plan view of substantially lateral U-shape is arranged to face a circumferential surface of the rotor, by the same reason as mentioned above, Laesser's stator core essential elements are three poles, wherein a first and second magnetic poles respectively magnetically excited by the first and second coils, while a third magnetic pole is magnetically excited by both coils, particularly a gap that defined by portion (1d) of the third magnetic pole and the rotor is smaller than that between the first and second poles and the rotor. Laesser discloses that the smaller gap defined by portion (1d) of the third pole results, in conjunction with the magnet of the rotor (4), in the formation of a positioning torque. This torque provides the rotor with two stable balanced positions. Thus, by applying the Laesser's essential disclosure, those skilled in the art would understand that it would have been obvious to

an artisan to modify the general shape of the stator' core as long as that designed shape having the essential features as disclosed by Laesser.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the step motor by configuring the having a plan view of substantially lateral U-shape is arranged to face a circumferential surface of the rotor. Doing so would provide a lighter stator core with less material and less cost. Also, a change in size or shape is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955) (emphasis added).

4. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Laesser and Nakajima (or Laesser and Sato)**, as applied in the rejection against the base claim, and further in view of **Besson (US 4,186,322)**.

The combination of Laesser and Nakajima (or Laesser and Sato) refs substantially discloses the claimed invention, except for the added limitations of the *stator includes protrusions for preventing displacement of the first coil and the second coil*.

For the purpose of providing mechanical means to support and holding the winding in place, Besson teaches the stator includes protrusions for preventing displacement of the first coil and the second coil (fig 1).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the step motor by configuring the stator includes protrusions for preventing displacement of the first coil and the second coil, as taught by Besson. Doing so would mechanical means to support and holding the winding in place.

Double Patenting

Statutory Type (35 U.S.C. 101) Double Patenting Rejection

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 that states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 1-3 rejected under 35 U.S.C. 101 as claiming the same invention as that of **claims 1-3 of copending U.S. Patent Application No. 11/386419**, which is a continuation thereof. This is a double patenting rejection.

This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Conclusion

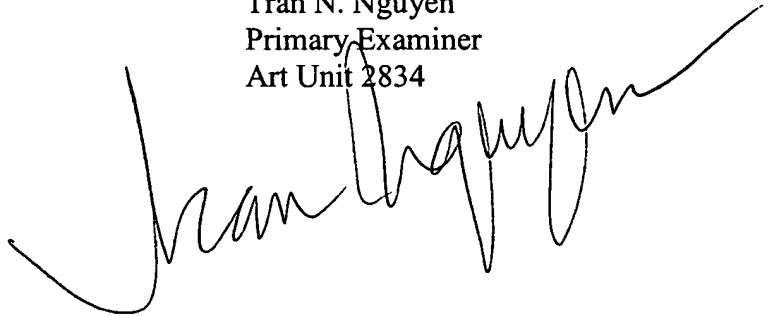
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran N. Nguyen whose telephone number is (571) 272-2030. The examiner can normally be reached on M-F 7:00AM-4:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571)-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tran N. Nguyen
Primary Examiner
Art Unit 2834

A handwritten signature in black ink, appearing to read 'Tran N. Nguyen', is written over the printed name and title.